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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,528	06/25/2003	David P. Quigley	8222-42	4126
54620	7590	03/29/2006	EXAMINER	
KRIEG DEVAULT LLP ONE INDIANA SQUARE SUITE 2800 INDIANAPOLIS, IN 46204-2079			KWON, JOHN	
			ART UNIT	PAPER NUMBER
			3747	

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/603,528

Applicant(s)

QUIGLEY ET AL.

Examiner

John T. Kwon

Art Unit

3747

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4,8,13-18 and 27-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,8,13-18 and 27-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                         |                                                                             |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                                |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____                                                             | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6, 8, 13-20, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griser (US 6 539 910) in view of Hoffmann (US 5 605 126). Griser discloses a piston with an annular surface (14). A combustion bowl is defined by a circumferential sidewall and a bottom wall portion. The sidewall has a sharp edge at the intersection with the annular surface (14) and **substantially** parallel to the centerline. An upward flared portion is located between the sharp portion and the rounded portion (18). However, Griser does not show the use of a solid head portion of a piston. Hoffmann shows that the provision of a solid piston head is old and well known in the art. Since the prior art references art from the same field of endeavor, the purpose disclosed by Hoffmann would have been recognized in the pertinent art of Griser. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Griser with the solid head as taught by Hoffmann.

Claims 1-4, 6, 8, 13-20, 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (US 6 314 933) in view of Hoffmann (US 5 605 126). Iijima discloses a piston with an annular surface (15). A combustion bowl (11) is defined by a circumferential sidewall and a bottom wall portion. The sidewall has a sharp edge at the intersection with the annular surface

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(15) and **substantially** parallel to the centerline. However, Iijima does not show the use of a solid head portion of a piston. Hoffmann shows that the provision of a solid piston head is old and well known in the art. Since the prior art references art from the same field of endeavor, the purpose disclosed by Hoffmann would have been recognized in the pertinent art of Iijima. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide the device of Iijima with the solid head as taught by Hoffmann.

### ***Response to Arguments***

Applicant's arguments filed January 20, 2006 have been fully considered but they are not persuasive. The attorney argues that the sharp edge (61, 75) and the sidewall (62) that is substantially parallel with the centerline are not disclosed in the prior art references. The examiner disagreed because the drawings in the references are qualified as prior art features even though unexplained by the specification. In re Mraz, 173 USPQ 25, In re Ming, 181 USPQ 94, 97. Accordingly, Griser and Iijima clearly show the provision of the sharp edges and wall that is substantially parallel to the centerline.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

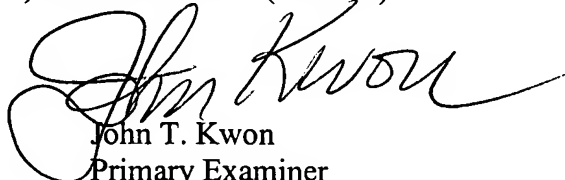
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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John T. Kwon whose telephone number is (571) 272-4846. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Yuen can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
John T. Kwon  
Primary Examiner  
Art Unit 3747

March 27, 2006